VOICE AND MOTION ACTIVATED TELEPHONE

CROSS-REFERENCE TO RELATED PATENT APPLICATIONS

This application is a continuation-in-part of U.S. Patent Application No. 09/328,705, filed on June 9, 1999, which is based on U.S. Provisional Patent Application No. 60/088,719, filed June 10, 1998.

This invention is concerned generally with a voice and motion activated communications device. More particularly the invention is concerned with a voice and/or motion activated telephone, particularly for use in a hazardous environment.

It is known in the art to have telephones with hands-free speaker made for use in a business office or even in the home. However, such systems do require activation by use of your hands and such systems thus do not allow entirely hands-free operation or activation of a communications device without manual manipulation of the device.

Objects of the Invention

It is therefore an object of the invention to provide an improved communications device and method of use.

It is another object of the invention to provide a novel method of use and communications device activated without manual operation.

It is a further object of the invention to provide an improved method and communications device for use in hazardous environments.

It is also another object of the invention to provide a novel method and communications device activated for operation by an electromagnetic beam or by other proximity device to sense the presence of a person.

It is an additional object of the invention to provide an improved method and communications device which is activated by voice command and further operated and deactivated by voice input alone.

It is yet a further object of the invention to provide a novel method and communications device which is activated and deactivated by encoded voice commands or by a voice recognition system.

These and other objects and advantages will be described hereinafter in the detailed description and illustrated in the drawing described hereinbelow.

Brief Description of the Drawing

FIGURE 1 illustrates a perspective view of a system constructed in accordance with the invention.

Detailed Description of Preferred Embodiments

A communications system 10 constructed in accordance with an embodiment of the invention is shown in FIG. 1. In the system 10 of FIG. 1, a sensor 20, such as for example a conventional infrared beam generator/detector device or conventional RF (radio frequency) proximity beam/sensor system, is used to detect the presence of a person (not shown). This sensor 20 can activate for two-way communication a communications device 30, such as a telephone, to enable the person to communicate to another location within the building or outside the building where the person is located. In another aspect of the invention, the person can activate the communications device 30 by generating particular sound patterns, such as from a sound generating device of any kind or by a person vocalizing certain sound patterns or word patterns or even a single word, a number, a letter or combination thereof. These sound patterns are detected by conventional audio sensor 40 (such as a microphone or other conventional sensor of sound) which converts the acoustic waves to an electronic signal for analysis by a computer. In another form of the invention a combination unit can include a video display as part of the audio sensor 40 or just be a video display alone which can sense the user's image for recognition purposes. In addition, the video display 40 can act to transmit or receive visual information. The computer in turn can perform the analysis of sound recognition in accordance with a conventional computer software program to determine whether or not to generate a command to activate the two-way communications device 30. Voice commands can also be used in conjunction with the voice recognition modality of the computer to connect to certain phone numbers, activate conference calling and maintain a call even when the person temporarily leaves the area of the system 10. This maintenance of a connection can be by an audio command for a specified time or by the computer for a predetermined time. The person can then proceed to communicate via the audio sensor and/or video display 40 with responses from the audio sensor and/or the video display 40 and/or a speaker 45, or other such conventional acoustic output devices. The person can affirmatively deactivate the system 10 or allow the device itself to deactivate by virtue of a lack of activity after a predetermined time period in the manner described hereinbefore. In another form of the invention the video display 40 can also function to selectively show the second person or their location on the screen. In this manner visual communication can also be accomplished without need for audio communication. The visual communication can even include holographic as well as two dimensional displays.

In another form of the invention, the communications device 30 can also be activated by a card reader 60 by the person using a conventional encoded magnetic card (not shown). The communications process can then proceed as described hereinbefore.

In a preferred embodiment, the system 10 is used in hazardous environments which require a person to be encumbered by protective clothing, such as large gloves or even full body covering.

In yet another form of the system 10, the volume level of the speaker 45 can be adjusted by the computer sensing the background noise level through the audio sensor 40 or even the visual information on the video display 40. This feature enables the person to hear over the background voice.

In another aspect of the invention, the system 10 can be made to enter a conference call mode to include other persons by the initial person stepping back and interrupting an infrared beam or RF proximity system of the sensor 20 and then stepping back again to a position near the audio sensor 40. Also the person can use other body motions to activate the conference call mode. In another aspect the video display 40 can be used to carry out these same functions via communication to the computer unit for analysis and processing.

In yet a further aspect of the invention, the person using the system 10 could carry out certain body language motions, such as positioning the person's hand in a certain way, which would be detected by the sensor 20 or the video display 40 and/or in combination with voice commands from the person the computer can modify the operational state of the system 10. For example, the computer could change the device from "on" to "off" or to "private", "semi-private" or a conferencing mode of communication.

In an additional embodiment, the system 10 can include a payment device 70, such as coin slots, a credit card reader, or paper money receptacles, to allow the person to pay for the communication.

In a further feature, the system 10 can include an emergency mode which allows manual dialing of the communications device 30 if operation without manual contact becomes inoperative.

While preferred embodiments have been illustrated and described, it should be understood that changes and modifications can be made therein in accordance with one of ordinary skill in the art without departing from the invention in its broader aspects. Various features of the invention are defined in the following claims.